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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/671,996	09/26/2003	Rajiv Shah	047711-0319	7673

23392 7590 08/22/2005

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EXAMINER

PHAM, LONG

ART UNIT	PAPER NUMBER
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2814

DATE MAILED: 08/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

H.A

Office Action Summary

Application No.

10/671,996

Applicant(s)

SHAH ET AL.

Examiner

Long Pham

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 and 32-46 is/are pending in the application.
- 4a) Of the above claim(s) 32-46 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-11 and 13 is/are rejected.
- 7) ☒ Claim(s) 12 and 14-26 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 03/22/05
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of claims 1-26 in the reply filed on 06/20/05 is acknowledged.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 2, 3-6, 7-9, 10, 11, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang (US publication 2002/0106887) in combination with Imaizumi et al. (2003/0007251).

With respect to claim 1, Chang teaches a method of forming a multilayer circuit substrate, comprising (see figs. 7-24 and associated text):
providing a base substrate 52;
forming conductors 53 on the base substrate;
forming a sacrificial structures 54 on the base substrate and conductors to define areas to be protected from the formation of a dielectric layer;
forming a dielectric thin film 58 on the base substrate, the conductors, and the sacrificial structures; and
removing the sacrificial structures to leave a patterned dielectric thin film on the conductors and the base substrate.

Art Unit: 2814

Chang teaches forming the dielectric thin film on the base structure, conductors, and sacrificial structures but fails to teach that dielectric film is formed by vacuum deposition.

Imaizumi et al. teach forming a dielectric film by vacuum deposition. See [0076].

It would have been obvious to one of ordinary skill in the art of making semiconductor devices to form the dielectric film by vacuum deposition in the method of Chang because such formation allow the formation of dielectric film having specified thickness. See [0076].

With respect to claim 2, Chang appears to teach forming the conductors by selective formation but fails to teach depositing a blanket conductor layer and patterning the layer to form the conductors.

However, the formation of conductors by depositing a blanket conductor layer and patterning is well-known in the art.

With respect to claims 3, 4, 5, and 6, Chang fails to teach that the conductors are formed by physical vapor deposition, evaporation, chemical vapor deposition, and photoresist lift-off process, respectively.

However, the formation of conductors by physical vapor deposition, evaporation, chemical vapor deposition, and photoresist lift-off process is well-known in the art.

With respect to claims 7, 8, and 9, Chang fails to teach that the conductor is patterned by chemical etching, the conductors are formed by shadow masking patterning and screen printing process.

However, the patterning of conductor by chemical etching and the formation of conductors by shadow masking patterning and screen printing process are well-known in the art.

Art Unit: 2814

With respect to claims 10 and 11, Chang fails to teach that the sacrificial structures are made of aluminum and are formed by shadow mask deposition and the removal of metal aluminum using ferric chloride solution.

However, the use of aluminum as sacrificial material, the formation of conductor material by shadow mask deposition, and the removal of metal such as aluminum are well-known in the art.

With respect to claim 13, Chang fails to teach mounting a circuit component on the deposited dielectric layer.

However, the mounting of a circuit component on a dielectric layer is well-known in the art.

Allowable Subject Matter

4. Claims 12, 14, 15-26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Long Pham whose telephone number is 571-272-1714. The examiner can normally be reached on M-F, 7:30AM-3:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on 571-272-1705. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2814

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Long Pham

Primary Examiner

Art Unit 2814

LP